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A new species of Bufonaria (Mollusca: Bursidae) from Moçambique

by

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SYNOPSIS

Bufonaria fernandesi sp. n. from Moçambique is a distinctive tall, narrow species with prominent, white apertural denticles on a red-brown background. The most closely related named species, *B. nobilis* (Reeve, 1844) from the central western Pacific, has a shorter spire and less prominently dentate aperture than those of *B. fernandesi*.

INTRODUCTION

Two empty shells of a very distinctive new species of the family Bursidae were trawled off the coast of Moçambique in 1975 and were sent to the Natal Museum by the collector, Sr C. P. Fernandes.

The relationships and characters of the genera of Bursidae are to be defined in a paper the writer is in the late stages of preparing, and most features of *Bufonaria* are therefore referred to only briefly here.

Class GASTROPODA

Family BURSIDAE

Genus *Bufonaria* Schumacher, 1817

Bufonaria Schumacher, 1817: 251. Type species (by subsequent designation, Herrmannsen, 1846, p. 135): '*Ranella spinosa* Lamck.' - *Bufonaria spinosa* Schumacher, 1817 (refers to Martini, 1780, vol. 4, pl. 133, figs 1274–76) – *Gyrineum echinatum* Link, 1807; Recent, Indo-West Pacific.

Bursina Oyama, 1964: 333. Type species (by original designation): *Ranella nobilis* Reeve, 1844; Recent, West Pacific.

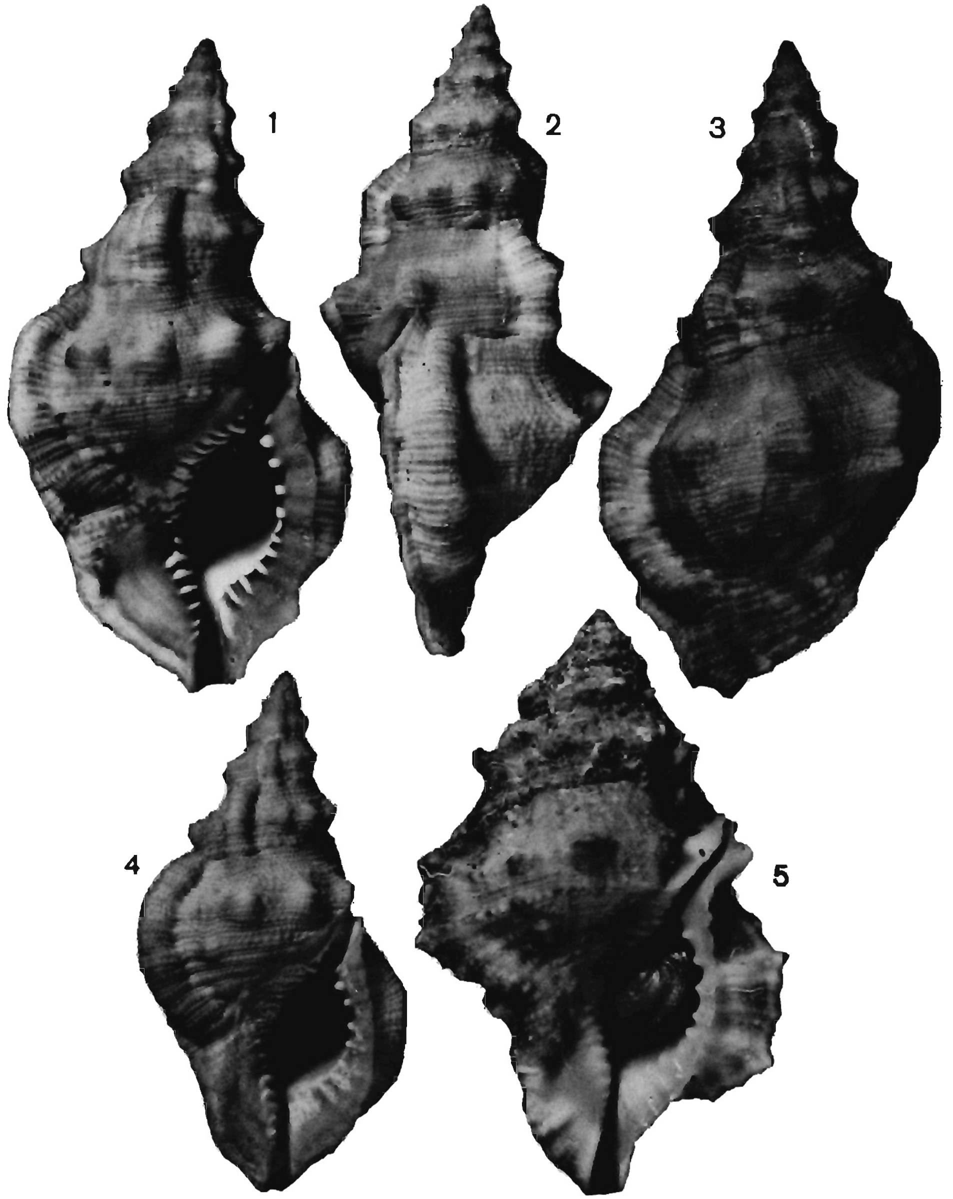
This is *Gyrineum* of some authors, not of Link (1807: 123). The type designation often accepted for *Gyrineum*, by Rovereto (1899), is invalid as the designated species, *Ranella spinosa* Lamarck, was not expressly included by Link. The next type designation for *Gyrineum* is by Dall (1904: 131), who cited *Murex gyrinus* Linnaeus, 1758 as type species, and in the same work (p. 115) stated that Link's name for this species, *Gyrineum verrucosum* Link, 1807, is a synonym of *Murex gyrinus* Linnaeus. This constitutes designation of *Gyrineum verrucosum* Link as type species of *Gyrineum* Link, 1807 (International Code of Zoological Nomenclature, Article 69 (*a*)(vi)). Therefore *Gyrineum* Link, 1807 is a senior synonym of *Apollon* Montfort, 1810 (Cymatiidae), and *Bufonaria* Schumacher, 1817 must be used in place of *Gyrineum* in Bursidae.

Diagnosis: Bursidae with varices laterally expanded, aligned up spire sides on almost all species; posterior canal of aperture short to very long, when long aligned up previous varices on spire; siphonal canal moderately long, curved prominently to left and then to right to form a large rounded fasciole whose ventral concavity is smoothly filled with the flared columellar callus; shell strongly dorsoventrally compressed in most species, thin, sculptured unusually finely for Bursidae with numerous, closely spaced rows of small granules and, in some species, with nodules or spines at the variceal shoulders. Seminal groove open, rather than closed as in almost all other species of Bursidae. Operculum obtusely fan-shaped, with nucleus at centre of adaxial edge in short species, to subcentral near the adaxial margin, to almost central (in the tall-spired *B. nobilis* Reeve).

Oyama (1964: 333) separated '*Bursina*' *nobilis* (Reeve, 1844) from *Bufonaria* because its operculum has an almost central rather than an adaxial nucleus. Short-spired species of *Bufonaria* such as *B. rana* (Linnaeus, 1758), *B. crumena* (Lamarck, 1816), and *B. foliata* (Broderip, 1825) have a narrow, obtusely fan-shaped operculum similar to that of *Phalium* and related genera (Cassidae), with the nucleus at the junction of the two straight adaxial margins. In a large suite of preserved specimens of *B. margaritula* (Deshayes, 1832: 424, pl. 3, figs 13–15) on loan from the Western Australian Museum (locality: Tayabus Bay, W. Quezon Prov., Luzon, Philippines, WAM. 678–70) all specimens have an operculum with the nucleus a short distance towards the centre from the adaxial margin, intermediate between its positions in *B. nobilis* and in short-spired species. It appears that the position of the opercular nucleus is correlated with spire height (and thus with the angle of the parietal area to the columella) in *Bufonaria*, as *B. nobilis* is the tallest-spired species previously described and *B. margaritula* is intermediate in spire height between *B. nobilis* and the short-spired species listed above. Therefore a range of nuclear positions should be accepted in *Bufonaria*, and *Bursina* Oyama, 1964 is here synonymized with *Bufonaria* Schumacher, 1817. The new species has an even taller spire than that of *B. nobilis*; its operculum will probably prove to have a nearly central nucleus.

Bufonaria fernandesi sp. n. (Figs 1–4)

Shell large, solid, less dorsoventrally compressed than in other species, with tall spire and relatively small aperture. Varices large and prominent, of rounded cross-section, slightly hollowed abaperturally, with spiral cords not raised into nodules where they cross varices, so that angulations of outline are weak and rounded; aligned up spire sides on earliest 3 or 4 whorls of spire but becoming progressively further apart down the spire, so that on last whorl they are 240° (i.e. ⅔ whorl) apart. Spire only slightly shorter than height of aperture plus posterior and siphonal canals. Siphonal canal relatively long (probably incomplete on available specimens), curved strongly left and then to right to form a prominent, large, rounded fasciole sculptured only slightly differently from remainder of shell. Sculpture of one peripheral row of large, widely spaced, slightly anteroposteriorly compressed nodules, with four nodules (and in some spaces a weak fifth) in intervariceal spaces of spire, reduced to three in last one or two intervariceal spaces; one or two weakly defined lower rows of small nodules; whole surface crossed by numerous narrow, low, closely spaced, rounded spiral threads rendered finely gemmate by weak, closely spaced, axial lirae; approximately 15 spiral threads on penultimate whorl and 30 on last whorl, with a single finer thread in each interspace; approximately 10 spiral threads on base and fasciole are about twice as wide and twice as high as others. Aperture narrowly oval, bounded by smooth, polished, flared, bright orange-brown callus; interior of outer lip bearing



Figs 1-5. *Bufonaria* species. 1-4. *B. fernandesi* n. sp. 1-3. Holotype (L = 91,0 mm). 4. Paratype (L = 73,0 mm). 5. *B. nobilis* (Reeve) (L = 55,2 mm).

10 or 11 short, prominent, rounded, white denticles on an orange-brown to dark red-brown ground; inner lip bearing approximately 18 short, prominent, well-separated, rounded, white plicae on a medium to dark red-brown ground, the uppermost three or four and lowermost three or four more prominent than the central, weakly anastomosing ones; uppermost and most prominent plica is at base of posterior canal, and two or three small denticles line parietal edge of posterior canal. Posterior canal narrow, deeply excavated into lip and adapical area of terminal varix; relatively short, extending only to base of peripheral nodule of previous whorl. Protoconch equidimensional turbinate (as in all Bursidae), of about three rounded whorls, apparently smooth (sculptural details eroded off both specimens). External colour cream to fawn, coarsely maculated and axially streaked with slightly darker fawn to pale reddish brown; interior pinkish mauve.

Dimensions: height 91,0 mm, diameter 47,4 mm, height of aperture + both canals 48 mm (holotype); height 73,0 mm, diameter 38,0 mm, height of aperture + both canals 40 mm (paratype).

Locality: trawled in 110 to 175 m, off the coast of Moçambique between Cabo das Correntes and Pta. da Barra Falsa, collected by Sr C. P. Fernandes, May 1975.

Holotype (G8236/T2050) in Natal Museum, paratype in collection C. P. Fernandes.

The new species is named in honour of Sr C. P. Fernandes of Maputo (Lourenço Marques) who collected both known specimens.

DISCUSSION

The species most nearly similar to *B. fernandesi* are *B. nobilis* (Reeve, 1844*a*: pl. 4, fig. 16; 1844*b*: 137) and *B. margaritula* (Deshayes, 1832: 424; pl. 3, figs 13–15). Specimens of the uncommon Western Pacific *B. nobilis* have been figured in colour by Shikama (1966: pl. 49, fig. 8) and by Habe and Kosuge (1966: pl. 16, fig. 7) and an excellent specimen with animal preserved (Fig. 5) is available for comparison from Mariel King Memorial Expedition stn. AHI/5, near Tg. Bt. Kapal, Haruku Island, east of Ambon, Indonesia, lat. 30°36′S, long. 128°24′E, dredged in 82–88 m, 31 May 1970 (Western Australian Museum, WAM. 616–74). *B. nobilis* is one of only two previously named species in which the spire height is of the same order as in *B. fernandesi*, but even in *B. nobilis* it is shorter than in *B. fernandesi*. *B. nobilis* differs from *B. fernandesi* further in having thinner and more laterally expanded varices that are united up the spire sides for the whole shell height, in the major spiral cords being raised into nodules where they cross the varices, in the more anteroposteriorly compressed peripheral nodules, in the longer posterior canal extending up to the preceding varix, in the more coarsely gemmate minor sculpture and, most obviously, in the similarly arranged but less promiment apertural denticles being of the same colour as their white to pale yellow background. *B. margaritula* has a spire that is intermediate in height between those of *B. nobilis* and more 'typical' short-spired species of *Bufonaria*, i.e. markedly shorter than that of *B. fernandesi*, but resembles *B. fernandesi* in having its varices thicker, more rounded, and less laterally expanded than those of other species of *Bufonaria*, and in most specimens the spiral cords are not raised into nodules where they cross the varices. The type species, *B. echinata* (Link, 1807), is the only species other than *B. nobilis* in which the spire is only slightly shorter than that of *B. fernandesi*, but can be distinguished from all other species of *Bufonaria* by the long, laterally extended spines on its varices.

B. fernandesi can be recognized easily by its tall spire, its prominent white apertural denticles set on a red-brown ground, and by having the varices aligned up the spire sides on the earliest 3 to 4 whorls only and becoming progressively further apart down the shell so that on the last one or two whorls they are arranged as in the genus *Tutufa* and most Cymatiidae. In the writer's opinion features of the radula and operculum, in conjunction with general shell shape and sculpture, are important guides to phylogenetic relationship in the Bursidae and the position of varices is of little significance. There can be little doubt that *B. fernandesi* is correctly assigned to *Bufonaria*, but the operculum and radula must be examined before its position is certain.

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